# *MOUND INTRUSIVE & NON-INTRUSIVE THROUGH CONCRETE CHARACTERIZATION ASTD*

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Deactivation and Decommissioning Focus Area

Mid-year Review

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# *Main Hill Tritium Complex*

- Three Major Buildings / Facilities, SW/R, T, HH
- Operated until September, 1998
- Undergoing Safe-Shutdown / D&D
- Paved Campus area

# *Mound Site*


BWXT of Ohio
a McDermott company

# *The "Old Cave"*

- Constructed in the early 1950s
- Located in the Semi-Works (SW) Building.
- Processed radium (Ra-226) and actinium (Ac-227) from 1951 to 1955.
- March 1959, decontamination/cleanup completed, some residual contamination still present.

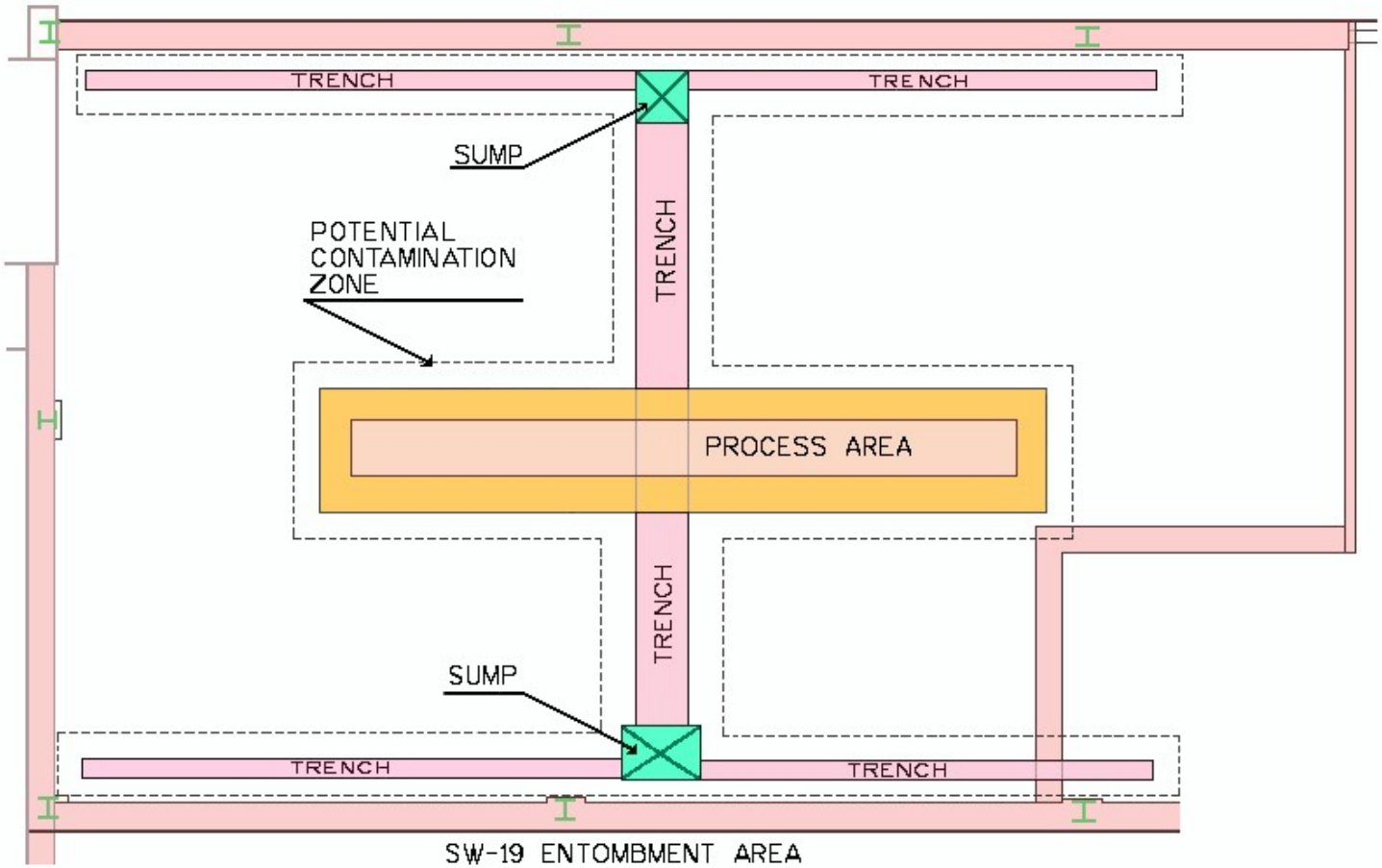
# The "Old Cave" (cont.)

- Area refurbished in early 1960s
- Entombment was constructed above the floor to encapsulate the remaining contamination
- Concrete cap now the floor of SW-19
  - Mound exit plan requires the contaminated entombment be demolished and disposed

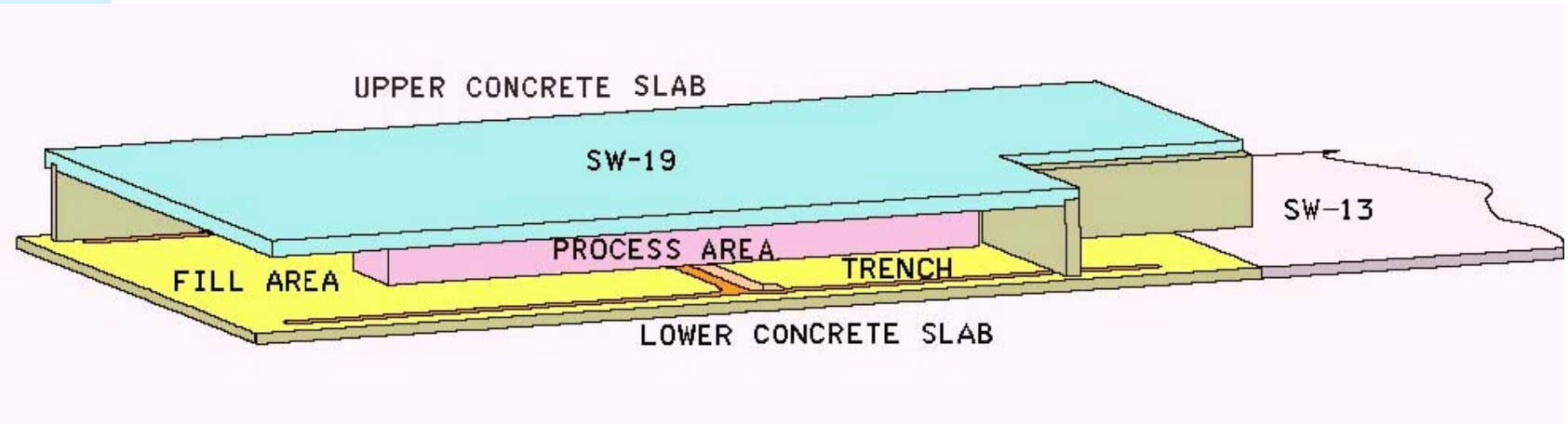
# Purpose

- To identify potential physical and radiological hazards from Cave & Building
- Goal
  - Selection and deployment of the best available characterization technologies to expedite completion of these critical path items
  - This serves to:
    - Determine/map radiological constituents
    - Provide information for next step
      - Mitigation of unknowns & risks

# SW-19 Layout


TRENCH
TRENCH
SUMP
POTENTIAL
CONTAMINATION
ZONE
TRENCH
PROCESS AREA
TRENCH
SUMP
TRENCH
TRENCH
SW-19 ENTOMBMENT AREA

# SW-19 Isometric



# Main Hill Tritium Complex

# Technical Approach

- Value Engineering (VE) Study
  - sponsored by the D & D Focus Area identified methods to remove the “Old Cave” concrete entombment from the Critical Path
- Proceed with proper selection of the best tools
- Assimilate expertise information (TechCon, ITRD)

# *Technical Approach (cont)*

- Solicit technology suppliers for Invasive Characterization
- Review vendor proposals.
- Coordinate Vendor processing activities to prepare for contractor arrivals.

# Technical Approach (cont)

- Work in this project is being performed in multiple phases.
  - Phase I incorporated the non-intrusive characterization activities
  - Phase II includes the intrusive characterization
  - Phase III activities are the deployments to other Ohio sites

# Technology Maturity

- All technologies considered for this project are fully mature.
  - It has been permitted to allow minor modifications to detector platform but the actual characterization technologies are “off-the-shelf” and commercially available.

# EM Thrust Applicability

- All sites in Ohio participating in this project are closure sites
  - This project has been able to identify / validate expected or unknown risk associated with entombed and sub-slab contaminates.
- Closure sites cannot afford long-term technology development work.
  - Interest, in short-term, in low concentration alpha field survey equipment, in order to steer excavations in real time

# *Timeliness & Understanding*

- Participating Sites are undergoing D&D
  - Beginning soil work within 24 months
- All Ohio closure sites are concerned with unknown risk in soil and under slab contaminants.
  - Many have very conservatively estimated (over estimated) the levels of contamination and, as such, have built in additional health and safety elements in their D&D

# Benefits

- A direct aid to verifying the uncertainty associated with uncharacterized areas.
  - Baseline technologies not established except characterization to be done during dismantlement.
    - Advance schedule and lessen uncertainty
- There have been no TSDSs.
  - Vendors abided by Mound health and safety plan.

# Progress

- Phase I completed
  - Caused re-evaluation of intrusive sampling
  - Showed value to early characterization
  - Focus expanded to SW/R Building surrounding Old Cave
- Phase II on hold
  - Completed perimeter walk down with ISOCS
  - Waiting for finalization of Sampling Plan
- Phase III deployment completed
  - Multiple site cooperation

# *Technologies Deployed*

- Gamma spectroscopy characterization
- Ground Penetrating Radar (GPR)
- Gradient Magnetics
- Electromagnetic Ground Conductivity
- ISOCS (In Situ Object Counting System)
- Small Foot-Print Geoprobe™

# 2001 Deployment

- Geoprobe® “direct-push” soil boring equipment
  - from Columbus (CEMP) to Ashtabula (AEMP).
- The purpose of the investigation was to characterize sub-slab soil contamination.
  - to provide an estimated volume of low level Rad and RCRA soils, primarily under site buildings and concrete slabs.
  - Results are being used to direct further analysis and collect confirmatory samples

# *Potential Technologies*

- Pipe Explorer
- Cone Penetrometer
- Small Foot-Print Geoprobe
- Diamond core drill.
- Smart Sampling™
- SEAMist™

# Cost & Schedule Status

- Fully funded no additional needed
- FY01 activities
  - ISOCS (In Situ Object Counting System)
    - SW/R Building perimeter walkover
  - Small Foot-Print Geoprobe
    - Deployed at Ashtabula
      - From Battelle Columbus
- FY02 Schedule
  - Complete Mound Phase II Activities
  - Complete Project & Final Report

# *Miscellaneous*

- Continue to discuss project at Stakeholder meetings & open houses
- Continue to improve project performance by acting on recommendations from review groups and peers.
- Continue to deploy, where possible, characterization technologies to aid in minimizing the sub-slab unknowns

# Conclusions

- The data and information obtained from any of these characterizations will be incorporated into the planning for the building and site remediation
- Reduce the uncertainties
  - Eliminate inflated risk dollars
  - Reduce inflated schedule
- Project estimates become realistic